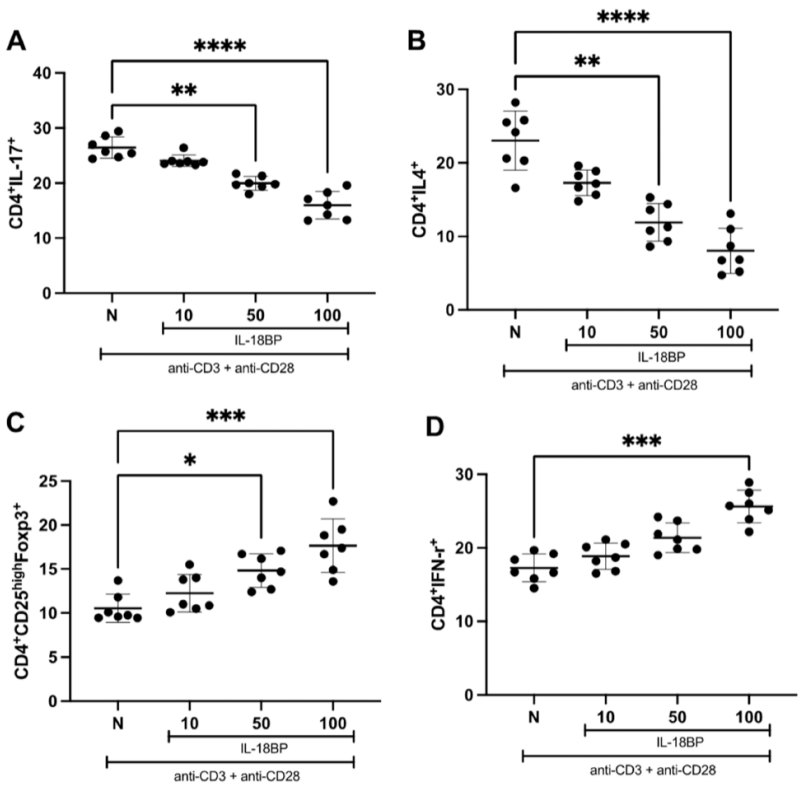
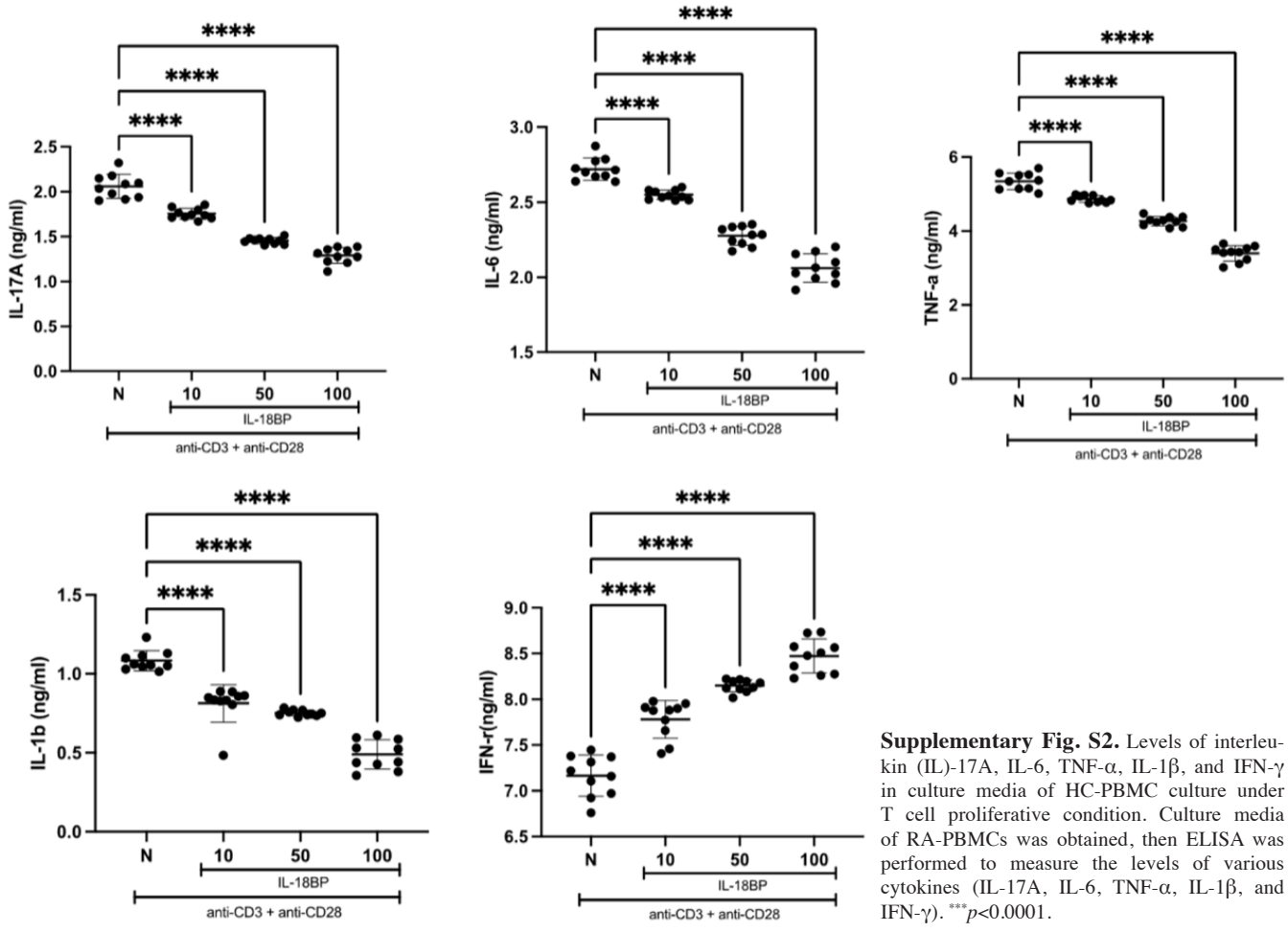
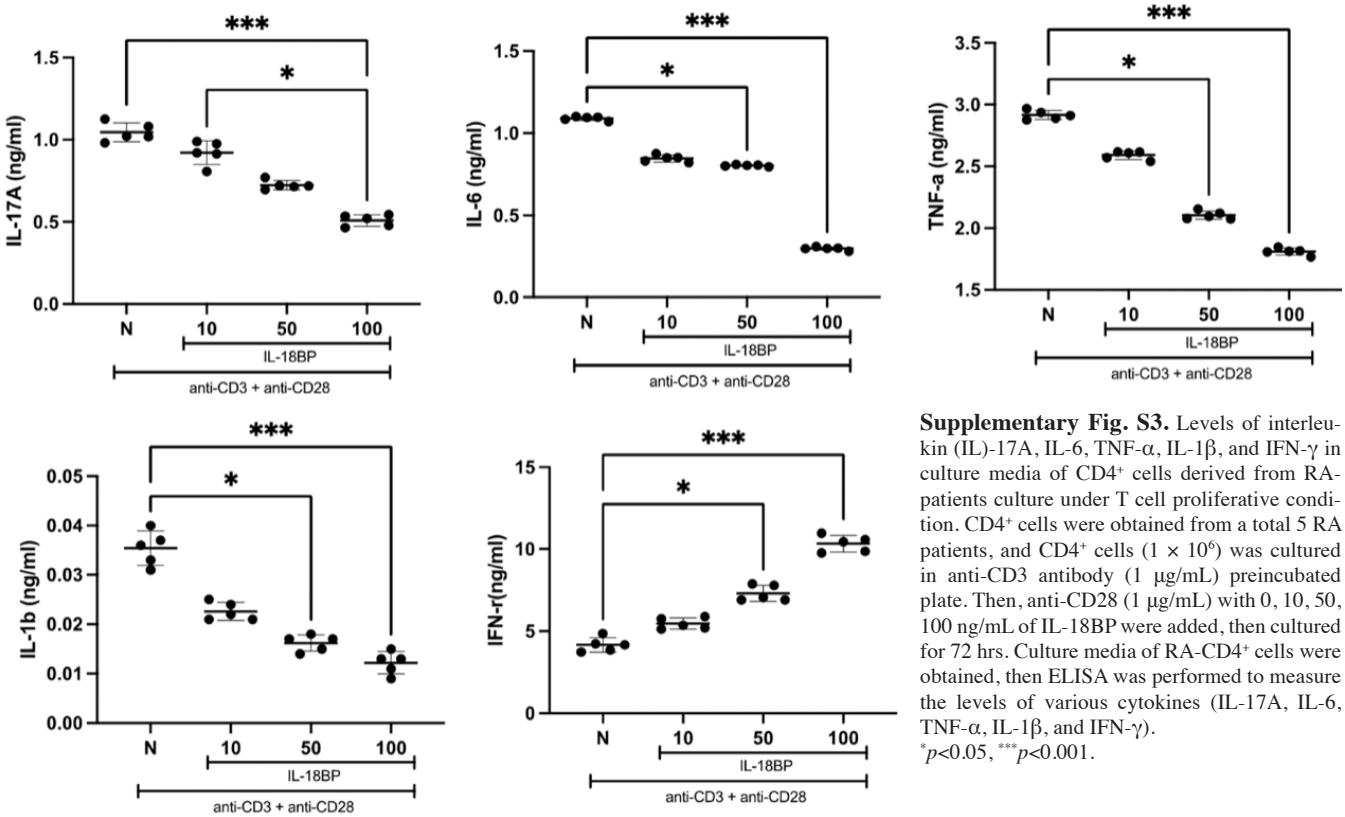


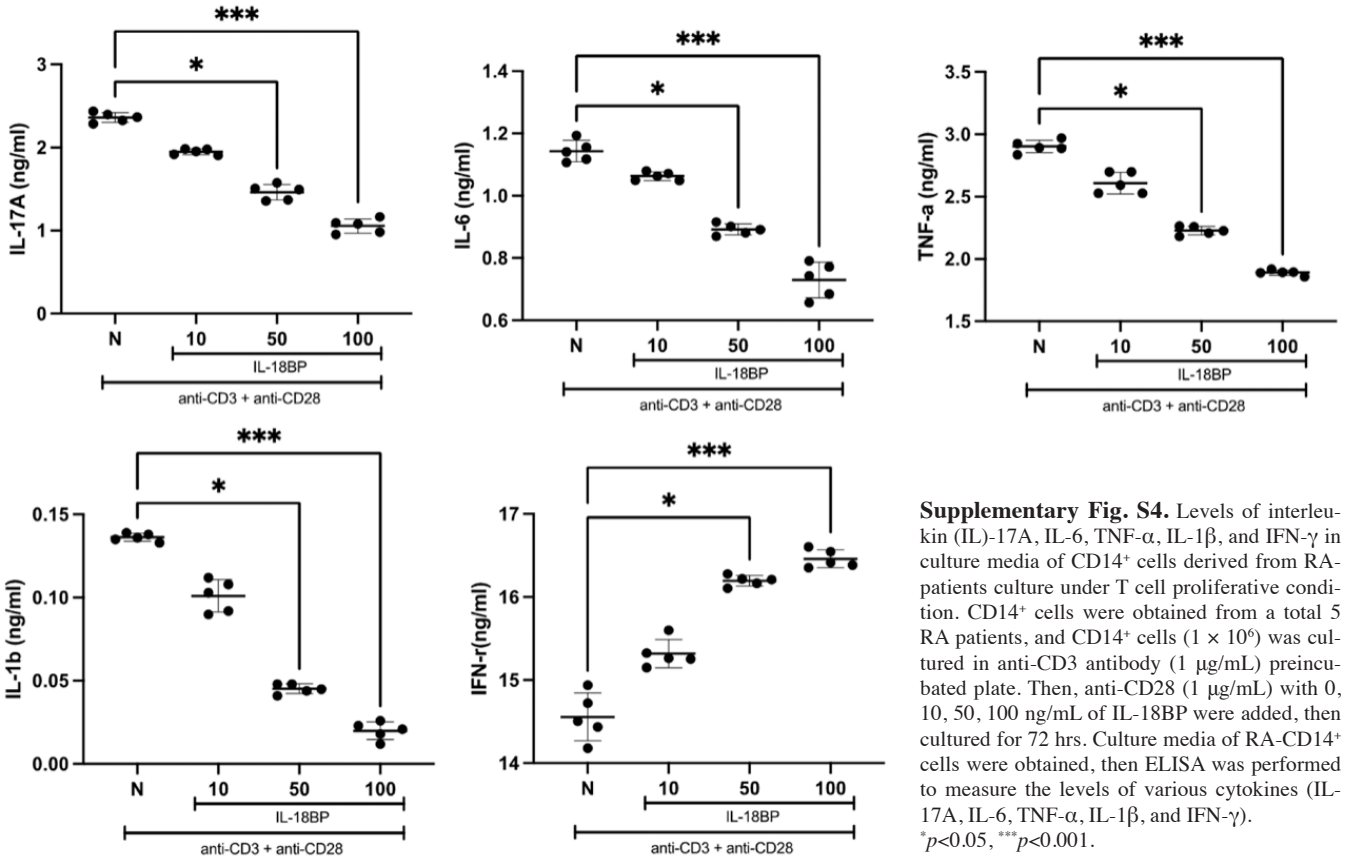
Supplementary Fig. S1. CD4+ T cell differentiation of HC-PBMCs measured by flow cytometry under T cell proliferation condition. PBMCs were obtained from a total 7 HC patients, and PBMCs (1×10^6) was cultured in anti-CD3 antibody (1 μg/mL) preincubated plate. Then, anti-CD28 (1 μg/mL) with 0, 10, 50, 100 ng/mL of IL-18BP were added, then cultured for 72 hrs. Then percentage of (**A**) CD4+ IL-17A+, (**B**) CD4+ IL-4+, (**C**) CD4+ CD25high Foxp3+, and (**D**) CD4+ IFN-γ+ T cell were measured by flow cytometry. $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$, $^{***}p<0.0001$.



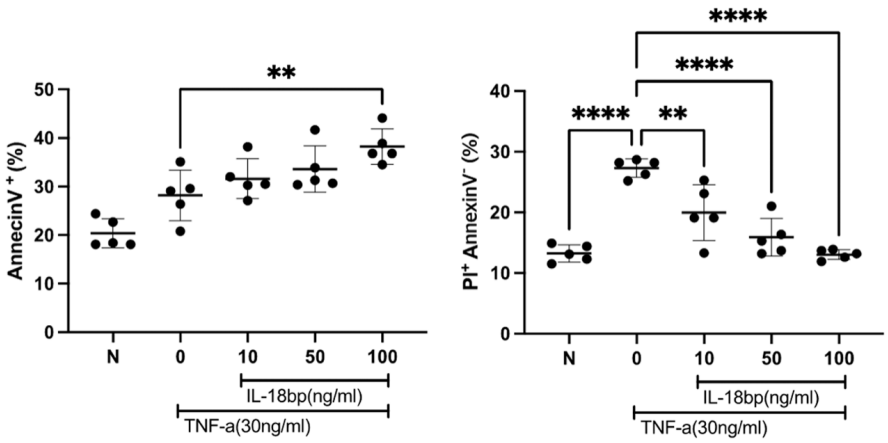
Supplementary Fig. S2. Levels of interleukin (IL)-17A, IL-6, TNF-α, IL-1β, and IFN-γ in culture media of HC-PBMC culture under T cell proliferative condition. Culture media of RA-PBMCs was obtained, then ELISA was performed to measure the levels of various cytokines (IL-17A, IL-6, TNF-α, IL-1β, and IFN-γ). $^{***}p<0.0001$.



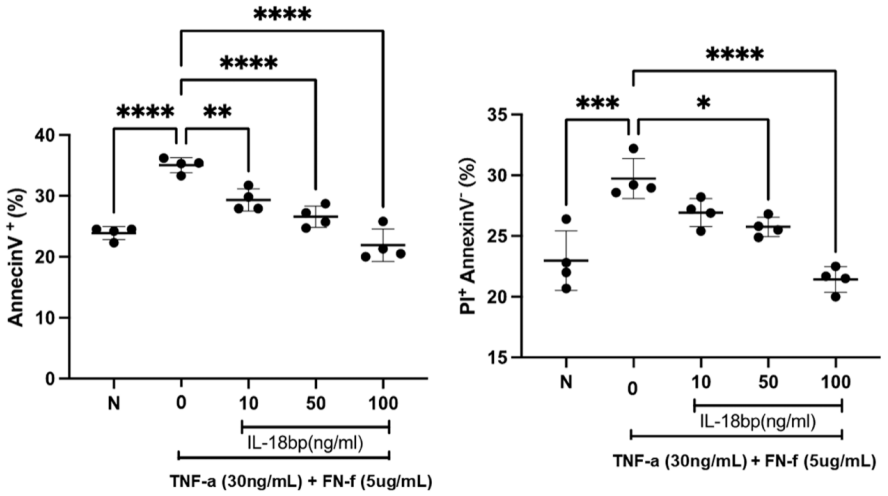
Supplementary Fig. S3. Levels of interleukin (IL)-17A, IL-6, TNF-α, IL-1β, and IFN-γ in culture media of $CD4^+$ cells derived from RA-patients culture under T cell proliferative condition. $CD4^+$ cells were obtained from a total 5 RA patients, and $CD4^+$ cells (1×10^6) was cultured in anti-CD3 antibody (1 μg/mL) preincubated plate. Then, anti-CD28 (1 μg/mL) with 0, 10, 50, 100 ng/mL of IL-18BP were added, then cultured for 72 hrs. Culture media of RA-$CD4^+$ cells were obtained, then ELISA was performed to measure the levels of various cytokines (IL-17A, IL-6, TNF-α, IL-1β, and IFN-γ).
$^*p<0.05$, $^{***}p<0.001$.



Supplementary Fig. S4. Levels of interleukin (IL)-17A, IL-6, TNF-α, IL-1β, and IFN-γ in culture media of $CD14^+$ cells derived from RA-patients culture under T cell proliferative condition. $CD14^+$ cells were obtained from a total 5 RA patients, and $CD14^+$ cells (1×10^6) was cultured in anti-CD3 antibody (1 μg/mL) preincubated plate. Then, anti-CD28 (1 μg/mL) with 0, 10, 50, 100 ng/mL of IL-18BP were added, then cultured for 72 hrs. Culture media of RA-$CD14^+$ cells were obtained, then ELISA was performed to measure the levels of various cytokines (IL-17A, IL-6, TNF-α, IL-1β, and IFN-γ).
$^*p<0.05$, $^{***}p<0.001$.



Supplementary Fig. S5. Apoptosis and necroptosis of OA-FLS under various concentration of IL-18BP (0, 10, 50, 100 ng/mL). OA-FLS (1.5×10^5, n=5) was seeded in 12-well culture plate with TNF-α (30 ng/mL) with 0, 10, 50, 100 ng/mL IL-18BP, then annexin V and propidium iodide (PI) were stained. To determine apoptosis and necroptosis, annexin V^+ FLS, and PI^+ annexin V^- FLS population were determined by flow cytometry.
$^{**}p<0.01$, $^{***}p<0.001$, $^{***}p<0.0001$.



Supplementary Fig. S6. Effects of IL-18BP on OA-chondrocyte cell death (apoptosis and necroptosis). OA-Chondrocyte (1.5×10^5, n=4) was plated in 12-well, and stimulated with 30 ng/mL TNF-α, 5 μg/mL fibronectin fragment (FN-f), and 0, 10, 50, 100 ng/mL IL-18BP for 72hrs. Then, the percentage of annexin V^+ chondrocyte, and PI^+ annexin V^- chondrocytes were measured by flow cytometry.
$^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$, $^{***}p<0.0001$.

Supplementary Table S1. Characteristics of enrolled patients with RA.

	RA patients (n=9)
Age (years)	58.6 ± 12.0
Sex (female, %)	7 (77.8%)
Disease duration (years)	1.0 [0.5;6.0]
DAS28	4.9 ± 0.9
Rheumatoid factor positive (n)	8 (88.9%)
Anti CCP positive (n)	7 (77.8%)
ESR (mm/h)	44.3 ± 24.0
CRP (mg/dL)	2.1 ± 1.5
Medication (n)	
Tumour necrosis factor inhibitor	0
Methotrexate	8 (88.9%)
Leflunomide	0
Sulfasalazine	4 (44.4%)
Hydroxychloroquine	3 (33.3%)
Tacrolimus	0
Glucocorticoid (prednisolone dose, mg/day)	7.5 [5.0;10.0]

Continuous values are presented as mean ± standard deviation or median with an interquartile range. Dichotomous variables are presented as numbers and percentage.
RA: rheumatoid arthritis; DAS28: disease activity score-28 joints; ESR: erythrocyte sedimentation rate; CRP: C-reactive protein.